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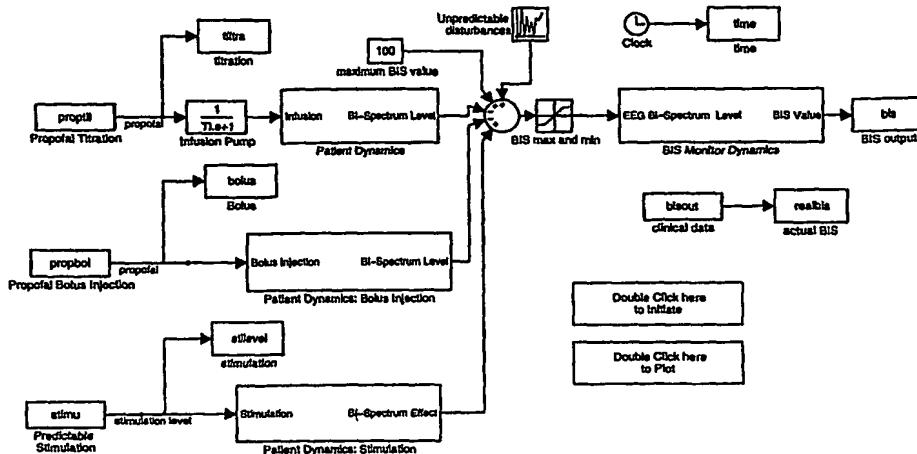
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(54) Title: SYSTEM FOR IDENTIFYING PATIENT RESPONSE TO ANESTHESIA INFUSION



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(57) Abstract: A generic model structure captures basic characteristics in BIS-based patients' responses to anesthesia and surgical stimulation, the model being used in combination with the insight of an anesthesiologist. The model structure represents the patient response with a time delay, a time constant for response speed, and a nonlinear function for drug sensitivity. Clinical data confirms the model structure and is used to establish parameters and function forms for individual patients. A feedback and predictive control strategy for anesthesia drug infusion is then introduced on the basis of the patient model. Feedback control alone cannot avoid large fluctuations in BIS values when significant surgical stimulation is imposed, as a result of time delays in a patient's response to drug infusion. Predictive control attenuates fluctuations of BIS levels from surgical stimulation.



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